CHICAGO NEUROLOGICAL SOCIETY.

March 7, 1900.

The Vice-President, Dr. Hugh T. Patrick, in the chair.

The Society held a joint session with the Chicago Medical Society, for the discussion of brain tumors.

THE GENERAL SYMPTOMS OF BRAIN TUMOR AND THE DIFFERENTIAL DIAGNOSIS.

Dr. Archibald Church read a paper with this title. He said that the principal symptoms of a growth within the skull are: Headache, generalized and localized, Jacksonian convulsions, mental impairment, choked disc, optic papillitis, vomiting and vertigo. According to Knapp, in 401 out of 614 cases headache was present. Twenty-three cases of tumor of the brain, verified by operation or by post-mortem examination, or both, have been observed by Dr. Church, and twenty out of these twenty-three cases presented headache in a marked degree. The character of the headache which we find in brain tumor assists us in making the diagnosis in many instances. In some cases the headache is rare, or when present is trifling; in others the headache is very intense. The headache of brain tumor is generalized; it is not strictly confined to the temporal, the occipital, or lateral regions, though in some cases it may be, and it is very difficult in children to get a distinct description of its character and location. In certain cases, where the headache is circumscribed and characterized by tenderness of the skull on pressure, it serves as a localizing feature. In one case a frontal headache was associated with tumor in the posterior portion of the temporosphenoidal lobe. In another case of frontal headache the tumor was found in the cerebellum, and in other instances where the headache has been occipital, the tumor has been found in the frontal regions. Ordinarily the patient first complains of headache. It is a generalized symptom, and may be a slight variation from normal health. The diagnosis of headache entails one of the most difficult problems the physician encounters. Some headaches which have been confounded with those of brain tumor are migrainous. Migraine is a neurosis which, of all the neuroses, shows, as a rule, a marked heredity. Patients will tell us that their father, mother, or grandparents had migraine. A history of migraine, coupled with the clinical features of the case, should be sufficient in some instances to make the diagnosis. A migrainous patient may have brain tumor. Other patients with severe headaches are those who suffer from neurasthenia. Patients with neurasthenia or hysteria may have brain tumor; and it is only after making a careful examination and eliciting the history of the case that one may be justified in ascribing severe headaches to hysteria or to neurasthenia alone.

The second major symptom of brain tumor is choked disc. As a rule, it is a symptom which is not of early appearance in brain tumor, consequently it is not a sign in the early stages of the disease. Indeed, the presence of choked disc either on one side or the other, or on both sides, is presumptive evidence of the presence of brain tumor, and when coupled with even two or three of the other major symptoms it may serve to confirm the diagnosis of a tumor within the skull. It is found at one time or another in over 80 per cent. of the cases.

A defective mental state is seen in many cases of brain tumor, and usually develops rather late in the course of the malady. In Dr. Church's twenty-three cases, seventeen showed the symptom late. Almost invariably the patient is apathetic. Sooner or later he is more or less indifferent to surroundings and conditions. He manifests mental sluggishness; he does not apprehend promptly the questions that are put to him; he takes time to think and to express his thoughts, and during this prolonged period of slow mental action he loses the drift of the question altogether, and may require a repetition of the question in order to respond in a proper manner. In certain cases the stupor is pronounced. The patient becomes lethargic, sometimes comatose.

A priori, it would seem that tumors located in the prefrontal region produce more disturbance of the mental processes than those located further back. This may or may not be true.

Fully one-half of the cases show convulsions early in the disease. In some instances the convulsions are preceded by intense headache; in others by vomiting. In the majority of cases they are followed by vomiting, and the larger proportion of cases which show general convulsions also manifest slighter attacks, such as Jacksonian fits, momentary absence, sudden explosions in the ear, etc.

Vomiting is a common general symptom of brain tumor. Jacobi reports it to have been present in 172 out of 568 cases. It was present in 13 of Dr. Church's 23 cases. Ordinarily, where vomiting is due to brain tumor, it is likely to be of the projectile variety. This vomiting may occur irrespective of a clean tongue, indigestion, etc. It may be protracted, with decided nausea. Vomiting is most common in tumors of the brain that are located posteriorly, *i. e.*, those that involve the peduncles of the cerebellum; those affecting the ocular apparatus, or involving the optic radiation, or those affecting the auditory apparatus of the internal ear or the nerves passing to the internal ear. In cases of brain tumor, with aural vertigo, vomiting is not uncommon. In the majority of cases the vomiting is persistent, and intracranial pressure becomes high. In other instances it occurs as an exception very early in the history of the case.

Vertigo occurred in 31 per cent. of the cases collected by Mills and Lloyd. In the twenty-three cases observed by Dr. Church vertigo was marked in seventeen. It is an early symptom and likely to be present when the ocular or aural apparatus is involved. It is associated with headache. Severe headache is followed by vertigo, or contrariwise; or vertigo is followed by vomiting, or *vice versa.* Muscular efforts, depending upon the position of the head, a sudden turning in bed, or other disturbance, may produce vertigo and lead to vomiting.

In addition to the symptoms described, there is a condition of the head which is not sufficiently dwelt upon, and which in some cases serves to make the diagnosis conclusive, and that is a certain degree of hydrocephalus, particularly in those who have not arrived at the age of puberty, and in whom the sutures are easily separated.

In some cases the tumor is so situated as to cut off the return circulation from the face and scalp; in other cases, where aneurysm exists, there is increased arterial tension.

Dr. Church makes it a routine practice to auscult the head of every patient who presents symptoms of a cerebral character, because in time something may be gained by it in cases of brain tumor. Auscultation in conjunction with percussion can be very easily done. By placing the stethoscope over the patient's brow one is enabled to detect changes in the percussion note which may in some instances be of undoubted value.

In a few cases tumor of the brain has produced erosions of the skull. Mention was made of a case seen with Drs. Fütterer and Henrotin, in which a tumor in the prefrontal region had eroded the temporal bone to such an extent that the end of a finger pushed through the skull on one side, after the death of the patient, could be easily detected by palpation on the opposite side. Westphal has reported a number of cases of erosion of the skull from brain tumor, followed by the spontaneous escape of fluid either into the temporal fossa, the nose, or the antra of the face. It is well, therefore, to examine carefully with the point of the finger every portion of the skull, and get as near as we can to the surface of the brain.

Percussion is another means of investigating the condition of the skull. Macewen, of Scotland, and Dana, of this country, believe they have noticed a distinct change in the percussion note over the seat of a cerebral tumor or abscess. A distinct dulness is elicited in these cases. Oppenheim and Bruns attach great importance to this method of investigation, claiming that if a circumscribed dulness can be elicited on percussion, it is a strong indication that a tumor lies in that area.

Mention was made of the value of the disappearance of the cracked pot sound in children, when the intra-cranial pressure was increased.

CEREBRAL LOCALIZATION.

Dr. Sydney Kuh gave a brief review of what is to-day known in regard to cerebral localization. The differential diagnosis between so-called idiopathic and Jacksonian epilepsy, and the general characteristics of cerebral palsies, were discussed in detail. The uncertainty of brain localization was emphasized particularly, and this point was illustrated by a number of interesting cases, partly taken from medical literature and partly from Dr. Kuh's own experience. Thus two cases were mentioned in which spasms occurred on the side of the body on which the cerebral lesion was found at the necropsy; one in which an angiosarcoma had destroyed practically all of the vermis superior cerebelli without causing any topical symptoms; one in which a psammoma of the hypophysis in place of causing acromegaly, was associated with stunted growth, and finally a case of cerebellar abscess with no cerebellar symptoms, but with typical Jacksonian epilepsy on the side on which the abscess was found. Dr. Kuh gave a brief history of one of those very rare cases in which laryngeal spasms were caused by cortical disease. His patient presented, besides the laryngeal spasms, spasms in the muscles of the face and a purely motor aphasia, and later right hemiplegia. Examination of the fundus showed atrophy of both optic nerves.

THE VALUE OF EYE AND EAR SYMPTOMS IN BRAIN TUMOR.

Dr. William H. Wilder placed optic neuritis second in importance to headache in the list of general symptoms of brain tumor, and yet, he said, it is surprising to note how often in the reports of such cases no mention is made of the condition of the optic nerve. Optic neuritis should be looked for at once in all cases of suspected focal disease of the brain, for it may be present although normal central vision exists.

As to the frequency of this sign, the writer found mention of it in 104 cases out of 140 cases of brain tumor recorded in the literature for four consecutive years, this being about 75 per cent. It is safe to say that optic neuritis occurs in 80 per cent. of all cases of brain tumor. The records show that it is of somewhat more frequent occurrence in cerebellar tumors, being noted in 90 per cent. of such cases.

Although so valuable as a general sign, it possesses very little worth as a localizing sign, nor does it furnish any definite information as to the character or size of the growth. It may be present with small tumors, and may be absent with large ones. Inasmuch as the optic neuritis in some cases may be of a low grade, it is important for the observer to avoid mistaking for organic change the blurring of the outlines of the disc in the high degrees of astigmatism.

Certain general conditions causing optic neuritis, such as meningitis, anemia, chronic nephritis and plumbism should be carefully excluded before placing too much reliance upon this sign. Emphasis should be placed upon the importance of repeated examinations of the fundus of the eye during the course of every case of suspected brain tumor.

Another important general eye symptom of brain tumor, although less frequent than the former, is temporary periodic blindness, coming on in the early stages of the growth. The attacks of blindness are sudden, and last from a few seconds to half a minute or longer. In the intervals the vision is as good as before, but frequent attacks may lead to permanent impairment of sight, as was seen by Dr. Wilder in a case recently.

Hemianopsia may be an important localizing eye symptom of brain tumor. It may be absolute or relative, and coexisting with certain other symptoms such as mind-blindness, amnesic color blindness, word-blindness, etc., would point strongly to lesion of the occipital lobe. It must be differentiated from the hemianopsia occurring with lesions of the optic tracts. Wernicke's pupillary sign may aid in this.

The ear symptoms in brain tumor relate principally to the labyrinth and the auditory nerve, and consist of subjective sounds and varying degrees of deafness. Careful exclusion of middle ear disease is necessary before formulating any conclusion as to the relation of ear symptoms to a possible intracranial growth.

RECENT ADDITIONS TO THE TECHNIQUE OF OPENING THE CRANIUM FOR DIAGNOSTICATING AND REMOVING TUMORS.

Dr. Van Hook described the Wagner method of temporary resection of parts of the cranium, and the Doyen method of so-called temporary craniectomy. The former has for its object the raising of a flap of skin, muscle, pericranium and bone from the side of the skull, with a nutrient pedicle of the soft parts. The Doyen method consists simply in raising a very large flap of the same kind. After exploration, or the removal of a tumor, the flap is turned back into place and sutured.

The Creyer, Doyen and Van Arsdale saws, driven by electrical engines were mentioned.

Two modern devices for opening the skull were considered at once commendable and novel. The Gigli saw, consisting of a simple wire of steel twisted while hot to produce a roughened surface, is used to open the skull by making cuts about the plate of bone to be lifted. The wire saw is introduced through drill-holes. Dr. Van Hook objected to the saw because it acts inside the skull in an approximately straight line in the direction in which the skull is to be opened, like the chord of an arc, and the dura may be wounded unless great care is used.

On the whole Dr. Van Hook favored most the DeVilbris-Dahlgren cutting forceps for making channels in the cranium. This instrument has the advantages of availability as to price, ease of transportation and sterilization, and makes a cut through the bone narrow enough to facilitate rapid healing without injuring the brain or its coverings.

Owing to the exhaustive character of the papers read, the discussion was very limited. Dr. Frank Billings related the history of a case in which operation failed to reveal a tumor, but the post-mortem examination showed a subcortical glioma under the motor center for the upper extremity, where the symptoms had already indicated its presence. Dr. Ochsner asserted that operative procedures in brain tumor were failures.